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ABSTRACT

No strong tradition of establishing worker skill standards exists in the United States. The private and public sectors are still struggling with the language used to describe skills necessary for success in the workplace and with the emphasis that should be placed on job-specific and general skills. Information for this paper was obtained primarily from telephone interviews with about 35 individuals representing industry, vocational education, and other groups. Telephone interviews with 16 individuals representing industry associations provided information on the process used in their industries. Industry-wide approaches to identifying and specifying employer skill requirements use various combinations of the following: (1) worker certification or credentialing; (2) program accreditation; and (3) curriculum design tailored to the specific skills needed. The National Institute for Automotive Service Excellence administers competency tests and certifies programs; Printing Industries of America has developed an industry certification program; and the American Bankers Association's American Institute of Banking concentrates on skills upgrading of employees. Interviews with nine state vocational educators show the process of obtaining industry validation of skills taught in public programs, beginning with identification of statewide competencies that must be used in programs. Nationally administered programs that use industry-based skills standards are the Department of Labor's apprenticeship approach and the Job Corps. Public policy issues related to national skills standards concern decisions about use of skill standards, a process for a national approach to individual certification, and assessment of skills. (YLB)

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DEVELOPING INDUSTRY-BASED SKILL STANDARDS

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For
National Governors' Association

CE 059 230

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Workers want to ensure future employment. Business and government want to protect against unemployment and to increase economic growth. Investments in human resources are the bridge between these two goals. In a German Marshall Fund report on the link between schools and the workforce, William Nothdurft notes that the anticipated effects of the integration of markets within the European Community of 1992 has sharpened the focus on the competence of the European workforce. He offers a simple equation: quality guarantees competitiveness; workforce education and skill credentials guarantee quality (Nothdurft, 1989).

Unlike Europe, no strong tradition of establishing worker skill standards exist in this country. There is a weak link between training workers receive and job standards set by industry. One of the recommendations in the German Marshall Fund report was that "one outcome of education and training should be universally recognized and accepted skill credentials." Other major policy groups have made similar suggestions. *America's Choice* called for a National Board for Professional and Technical Standards. The nation's governors urge "an ongoing dialogue with employers to define workforce competency standards that reflect the changing skill requirements of the workplace."

This paper will review the status of industry-developed skill standards. Many industry associations identify "national" skill standards, i.e., the process of determining the skills and performance objectives recognized throughout an industry. Experts within an industry specify those competencies required for a specific occupation.

Information for this paper was obtained primarily from telephone interviews of about 35 individuals representing industry associations, vocational education, and a variety of

other groups. Sixteen individuals from industry associations shared information on the process used in their industry.

Competency standards articulate the duties and tasks required in specific occupations. They focus training on the outcomes expected by employers. Their usefulness in achieving public policy goals are varied. If worker skills are clearly articulated, workers can be assessed in hiring and promotion situations regardless of where they trained or previously worked. If standards are clear, skills might be more "portable" across different labor markets. Standards can provide a common agenda for developing curriculum across the many workforce preparation institutions and programs. If instructors in workforce preparation institutions know what performance is required for a job, instruction can be targeted to meet those standards. Finally, workers would have a clear idea of skills requirements for hiring and better understand the connection of education and training to those requirements.

The paper briefly examines how industry-based standards are used in vocational education. Nine state vocational educators were interviewed to understand the process of obtaining industry validation of the skills taught in public programs and to learn more about the status of competency-based programmatic standards. Finally, the paper identifies issues that need additional consideration.

The Skills to be Included

To a great extent, both the private and the public sector are still struggling with the language used to describe skills necessary for success in the workplace. There is general agreement that more than job-specific skills are needed particularly for the workplace of the future. The American

Society for Training and Development (ASTD) reported seven skill areas needed by all workers.

Calls for the reorganization of work mean changes in the skills demanded of workers. Firms are beginning to define job classifications more broadly. With this process, workers will be expected to perform more tasks and to take responsibility for problem identification and resolution. Work teams and front-line decision making will mean that the workplace has fewer supervisory and management levels. The division of labor where management gives orders and workers follow is gradually being replaced with worker empowerment accompanied by more worker responsibility for quality improvement.

The Office of Technology Assessment's (OTAs) 1990 report, *Worker Training: Competing in the New International Economy*, notes that new technical methods, such as statistical process control, serve as motivational tools to help workers understand what they are doing and find better methods. OTA found that many of the new technical methods introduced do not require extensive training in task-specific skills but require attention to problem-solving and to skill breadth. The flexible skills that enable workers to respond to quality improvement efforts emphasize more than job specific skills for workers. The problem is to define skills that are common to many occupations.

The Secretary's Commission on Necessary Skills (SCANS) is in the process of identifying a series of generic skills that underlie all job levels and classifications. The SCANS Commission is considering five functional competencies and three foundation skills needed for all workers.

Functional Competencies

Work within and on systems

Work with people

Work with information

Manage resources

Work with technology

Foundation SkillsBasic skills: reading,
math, writing, listeningHigher order thinking
skillsPersonal qualities --
responsibility,
self-esteem, self-
management

While many are following the SCANS process, it is too early to determine the effect the Commission's recommendations will have on workforce preparation institutions and with employers. However, for workers, these skills must be combined with some level of occupation-specific skills. For purposes of education and training, the difficulty is in deciding the degree to which the focus of skill attainment and instruction should be on job-specific skills or the generic skills. Industry skill standards and public sector vocational training focus on identifying detailed tasks for specific job descriptions. In the 80's, vocational education programs began to incorporate job readiness and basic academic skills into their programs.

Even for job specific skills, identifying the skills that workers need **now** is necessary but not sufficient to meet new international economic realities. Work has changed more rapidly than preparation institutions. The lack of confidence that public schools, providing instruction in a traditional manner, can provide the foundation skills needed in the new work environment is coupled with uncertainties about the quality of vocational preparation programs. The age old criticism of vocational preparation programs is that they are unable to bring the latest technological advances and new methodologies from the workplace to the classroom.

Approaches Used by Industry

The efforts of national associations to develop broad standards will be reviewed in this section. Voluntary industry-sponsored standards seem to result from two concerns. In some instances, self-regulation is seen as a way to prevent government regulation. More often mentioned is the inability to recruit workers with needed skills.

National standards have long been used to assure professional competence in some occupations. Doctors, lawyers, and accountants come to mind immediately. For some occupations, a mandatory certification of competence, known as licensing, is required. Licensing, required to protect the public health and safety, is a function of state government boards. In many cases, licensing has resulted in a hodge podge of requirements that differ from state to state with little reciprocity across states. Licensing will not be included in this paper.

Industry-wide approaches to identifying and specifying employer skill requirements use various combinations of approaches: worker certification (or credentialing), program accreditation, or curriculum design.

1. **Certification** refers to the process by which verification of occupational-specific competencies are issued by various institutions, agencies, or associations to **individuals** who meet predetermined standards.

The process of certification assumes a pre-existing level of basic academic skills and is occupationally specific. Conversations with industry representatives and others indicated that most certification of individuals is at the initial qualifying level with no additional levels of certification once workers gain experience and proficiency.

The term "qualifying level" is used to distinguish it from "entry" level employment where no occupational skills are required. To most industries, the certification process is at the qualifying level. The process assumes that workers have some of the knowledges and abilities needed to success on the job acquired either through education or training.

Many individuals interviewed felt that other groups might have different levels of certification, but most examples were for qualifying level positions. The certification process does assume that new skills are attained over time, and a recertifying process is used. Certification tests are changed primarily due to changes in technology.

There seem to be few examples of levels of certification based on attaining additional education or achieved through acquiring additional experience. One example of a multi-level process is the National Institute for Certifying Engineering Technologies which certifies five levels of engineers from those with no experience to the most senior level requiring 15 years of work experience. Another variation is that used by Associated General Contractors described later in the paper.

The most common method of certifying individuals is through an examination developed by professional testing bodies with an advisory group of educators and experts in the field. In some cases, individuals must have some work experience -- usually about two years -- to be eligible to take the exam. Of the groups contacted all but one use only multiple choice written tests given to groups of individuals. When questioned about why performance-based tests (work sampling, rated observations, and other demonstration of skills) were not common, industry representatives all mentioned the cost of administering individualized tests and concerns about reliability (whether the test obtains consistent results).

2. **Accreditation** is the process of evaluating and recognizing a **program** of study as meeting predetermined standards or qualifications.

Industry accreditation of an educational program is voluntary. This process is a variation of the institutional accreditation process used in education in which educational standards are maintained by state and regional accreditation bodies. One of the significant differences is that program accreditation by industry has a direct relationship to quality outcomes rather than the processes used. Program accreditation seeks to assure that program completers have the competencies needed in the workplace. Educational institutions desire recognition by industry to ensure that programs are meeting employer needs and to assist in placing graduates in jobs. Steps in the voluntary accreditation process include:

- o Developing standards to use to evaluate a program.
- o On-site evaluation of procedures and processes led by a team of professionals within the field to determine if standards are being met.
- o The accreditation decision coupled with a formal recognition of a program.

3. **Curriculum design** is used to establish the content of the curriculum and offers training modules to educational institutions.

Curriculum design is a single strategy used by some industry associations and in combination with individual certification and/or program accreditation by others. Several associations work with their members to specify the skills needed and then to develop a curriculum using a modular design. This allows different modules to be used for different occupations. An example of this approach is the basic electronics curriculum

developed by the Electronics Industries Association. It is used in about 3,000 schools for about 15 consumer electronics occupations.

Some industry associations use all three approaches. Whichever approach to developing standards is used, associations typically develop them in conjunction with established educational institutions. Educators often assist industry experts in writing competency statements or in the development of certification tests.

No empirical information was found about the effect of standards on hiring practices, but association representatives concluded that the movement to standards improved the quality of the labor pool and was important to their industry.

The American Society of Association Executives (ASAE) provides a package of information to members on this topic entitled "Self-Regulation: Accreditation, Certification, and Standards." In 1987 ASAE surveyed over 2,000 associations and found that 11% used accreditation, and 17% used certification. Sixty-four percent of associations using certification relied on an exam to grant certification to individuals (the survey did not specify the testing method used).

Many associations have a recertification process for both workers and programs. ASAE's survey found that 54% of associations using either individual certification or program accreditation have recertification requirements. This requires requalification of the worker or the program every three to five years.

Cost of the Process -- Cost of the development of standards and the various methods used to attain them are primarily met by the industry. When tests are used to certify skills, individuals

usually pay a fee to take the test. Although, training and development of national skills are not the primary mission of industry associations, this service was viewed as sufficiently valuable to continue the financial commitment. Association representatives stated that members valued standards as a way to improve the quality of the workforce.

Industry financing of the development of standards for some occupations has been a result of strong union contracts. Union models of skill-based training are numerous with most examples originating from apprenticeship training in the construction trades.

Examples of Approaches Used by Industry Associations

The **National Institute for Automotive Service Excellence** (ASE) was established as a non-profit organization to promote the highest standards of automotive service. ASE administers competency tests in nineteen specialty areas within four series: Automobile, Heavy-Duty Truck, Autobody and Paint, and Engine Machinists. Tests are designed to discriminate between the competent and the less competent in the actual diagnosis and repair of automotive systems on the job.

In order to set standards for each job specialty, industry experts from each field are first assembled to do a job task analysis. The task analysis is then put in questionnaire form and sent to working technicians asking them to rate the task they do on the job by such measures as frequency, criticality, difficulty level, and importance. Workshops made up of technical experts then use the results of the questionnaire to determine the test content and its specification. The tests are constantly updated and new questions added as new technology necessitates changes in a technician's job.

In addition, ASE offers an automobile technicians' training certification program which accredits programs at both the secondary and post-secondary levels and has been used as a model by other industries. Sixty percent of programs recognized through this process are at the secondary educational level. The **National Automotive Technicians Education Foundation, Inc.** (NATEF) evaluates training program according to industry standards so that the programs may be certified by ASE.

Since the inception of the program certification effort in 1983, NATEF has evaluated over 500 programs in 48 states working closely with state vocational education directors. The purpose of the program is to improve technical instruction to prepare automobile technicians for employment. A program must be certified in a minimum of three skill areas and may be certified in up to eight.

The steps in the process of program certification include:

1. Upon application, program staff complete a self-evaluation.
2. NATEF evaluates the report and plans an on-site evaluation. A team of instructors and technicians review the program for two days. The team assesses the curricula, the facilities, and the equipment.

Over time, instructors must obtain current ASE certification in the area(s) considered for certification. Industry representatives identify each competency statement as being either low or high priority. Program curriculum must have 80% of the high priority items identified in the task lists.

Each of the eight skill areas reviewed has a minimum number of hours of instruction. An alternative to

meeting the minimum number of hours is that 75% of the graduates in a given area must have passed the ASE certification tests.

3. If certification is granted, the program receives a wall plaque identifying the areas of certification. Those that do not meet the requirements are given a report on necessary improvements. An appeals process is also in place.
4. Programs undergo a self-administered compliance review every two and one-half years. They provide information to NATEF about the current status of their programs.
5. Recertification is required after five years. An evaluation team conducts the one-day on-site review.

Programs are encouraged to recognize student completion of specific skill areas on their diplomas. This is done by providing a stamp or seal on the diploma indicating completion of any one of the eight specialty areas. After two years of work experience, individuals are eligible to take the ASE certifying examination in their specialty area.

The **Printing Industries of America** (PIA) developed an industry certification program, called Printed, because of the shortage of skilled workers nationwide. The certification was originally developed by PIA's Georgia affiliate in conjunction with state vocational educators. The process is similar to that used by NATEF although either local affiliate or PIA national can accredit programs. Printed instruction is based on 335 tasks divided into 6 certification areas. Students may receive a certificate in one or more of the skill areas if they meet 80% of the tasks at specified levels (See Attachment A for an example of an industry task list).

The Air-Conditioning and Refrigeration Institute (ARI) and Gas Appliance Manufacturers Association (GAMA) sponsor a competency examination program for three occupational areas: residential heating and air-conditioning, light-commercial heating and air-condition, and commercial refrigeration. These exams test for the skills needed in entry level technician positions.

ARI is made up of manufacturers of heating and air-conditioning equipment. Demand for improvements in quality repair services arose from manufacturers who felt that the quality of their product was perceived as poor when improper maintenance was really the issue. The manufacturers' response was to develop standards of minimum competency through a national test. In addition ARI publishes curriculum guides and study aides to assist in communicating industry standards.

Associated General Contractors (AGC) uses a multi-level approach to ensure quality in the commercial construction craft programs. First of all, AGC recognizes approximately 150 secondary school programs which prepare entry-level workers. Procedures for recognition are similar to those used by NATEF with one important exceptions. Local AGC chapters make decisions about recognizing local programs. The local evaluation team reviews local programs and awards or denies recognition and has discretion about modifications to specific competencies. According to AGC officials, about 30% of programs are not recommended initially for recognition. Currently no fee is charged to the school.

Second, AGC certifies workers through multiple written examinations in each of three craft areas: residential carpentry, commercial carpentry, and brick and stone masonry. Workers are eligible to take the tests with either two years of experience in the craft field, completion of an industry

recognized apprenticeship program, or completion of an AGC recognized program. The multiple choice tests were developed in conjunction with the Oklahoma Department of Vocational Education. Performance tests using actual work demonstrations were considered too expensive to administer.

There are two levels of certification. Workers can be certified in a specific skill area (residential carpentry, commercial carpentry, masonry); or if the individual passes the tests in all three craft areas, he/she is certified as a "master craftworker." Both levels of certification are valid for five years. Individuals who are not certified as "master craftworker" have up to two years to pass all tests required for recognition. This process was piloted in 1989 in ten local AGC chapters. Interestingly, approximately 77% of the fees for the tests have been paid by employers.

Finally, AGC provides specific curriculum for schools in the various trades. The curriculum was also developed in conjunction with the Oklahoma Department of Vocational Education.

Other associations concentrate on other approaches that focus on skills upgrading. Some programs do not focus on approving workers for entry into a field but on upgrading skills of employed individuals. The **American Bankers Association's American Institute of Banking (AIB)** concentrates on career enhancement. Local AIB chapters develop partnerships with local educational institutions, usually community colleges. In this way, some courses can receive college credit. There are nine AIB diplomas and certificates available upon completion of particular courses.

AIB recently established the Institute of Certified Bankers (ICB) which provides a voluntary certification program for mid-level occupations such as trust officer, compliance officer, and

security officer. Written multiple choice examinations have been developed and are scheduled to be administered for the first time in July, 1991. An accreditation system has been in place for banking schools since 1986.

Table I, which follows, summarizes the approaches used by those industry groups interviewed for this paper.

Opportunities in Vocational Education

The use of industry-based standards has and will continue to have a dramatic impact on vocational education. Skill standards focus on outcomes and on holding institutions accountable for achieving them. Many vocational educators have long used competency-based approaches to instruction.

Standards of performance are implicit in competency-based instruction. Since competencies identify tasks and the standard that must be met for acceptable performance, states that already heavily use competency-based instruction are experienced with the process of establishing standards. Competency-based vocational education stresses accountability because measurable skill improvement is built in to competency-based instruction.

This emphasis on accountability has positioned vocational education to be ready to meld their efforts with new legislative requirements. Amendments to the Carl Perkins Act specify that by 1992 "measures of learning and competency gains, including student progress in the achievement of basic and more advanced academic skills" must be in place statewide for secondary and post-secondary programs. Program performance requirements also include one or more measures of performance which include "competency attainment" or "job or work skill attainment or enhancement including student progress in achieving occupational skills . . . " (Section 115 (a)(1) and (2))

TABLE I: SELECTED SUMMARY OF INDUSTRY APPROACHES TO STANDARDS

	Accreditation	Certified Individuals	Curriculum Development	Multiple Levels of Certification
Allied Health Education and Certification	X	X	X	
American Bankers Association	X	X	X	
American Chemical Society	X			
American Welding Society			X*	
Associate General Contractors	X	X	X	X
Association of Diesel Specialists		X		
Association of Certified Meeting Planners		X		
Electronics Industries Assoc.			X	
Institute for Certified Records Managers		X		
International Institute of Carpet and Upholstery Cert.		X		
National Association of Business & Ed. Radio		X		
National Association of Home Builders		X	X	
National Association of Medical Technicians		X		

TABLE I: SELECTED SUMMARY OF INDUSTRY APPROACHES TO STANDARDS - Continued

	Accreditation	Certified Individuals	Curriculum Development	Multiple Levels of Certification
National Institute for Automotive Excellence	X	X		
National Institute for Certification of Engineering Technology		X		X
National Jail Tech. Program		X		
National Tool & Machine Assoc.			X	
National Uniform Certification of Building Occupations		X		
Printing Industries Assoc.	X	X		
Professional Secretaries International		X		

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*In process

State educators believe that their work over the last decade will enable them to meet these requirements, but they are unsure how performance measures will actually be implemented from the federal level. While many states have used various performance measures over the last few years, none interviewed had established specific competency attainment measures to meet the Perkins requirements. Questions that remain open are how to hold specific institutions accountable and how to aggregate measures of skill gains for individuals.

Establishing Competency Systems

Eight of the nine state directors of vocational education interviewed indicated that their states have identified statewide competencies that must be used by all local institutions in their programs. To allow for local variations, local programs can add tasks but not subtract them. Among the states, there are some differences in how tasks are aggregated into duties and into occupations, but the process of identifying skills is similar. One of the most important changes in vocational education has been the use of technical steering committees.

Comprised of industry representatives for various occupational clusters, they assure that industry standards are the basis for instructional standards. Most states start with labor market information to identify jobs in demand, develop a criteria to use with a task list, and then validate the job duties and tasks identified with the technical steering committee for an occupational area.

In every state contacted where statewide approaches are in use, the process of defining competency tasks and performance objectives started with a search for what had already been done. A committee made up of instructors and business and industry

representatives (supervisors and incumbent workers) reviewed material and made decisions. Staff contacted other states and the Vocational-Technical Consortium of States (V-TECS) for task lists.

V-TECS is a consortium of 24 states begun almost two decades ago to promote competency-based vocational education. Since 1973, member states have developed 160 "catalogs" of performance objectives correlated with over 700 Dictionary of Occupation (DOT) jobs. A catalog includes the tasks, tools, materials, and standards for successful performance. V-TECS officials note that each catalog is updated every two-three years. V-TECS provides task lists for specific jobs, not the core competencies or clusters used in many secondary educational programs. States appear to rely heavily on V-TECS as a starting point.

Some states used a modified DACUM (Developing a Curriculum) process. The DACUM process relies on brainstorming with incumbent workers to identify tasks. Job task lists are reviewed with management and unions to verify the accuracy.

All state vocational educational directors interviewed noted that industry validation of the tasks was key. Top industry people were involved, and the process had credibility because changes were made to accommodate industry standards. Educators stated that industry involvement assured that standards were at the world class level.

The Perkins amendments also require the integration of academic and occupational skills at both the secondary and post-secondary levels. Basic academic skills (foundation skills in SCANS terminology) are embedded within occupational skills. Research in improving basic academic skills indicates that an integrated instructional approach that uses the content area to address academic skill deficiencies may improve academic skills

and decrease program dropouts. Over the last five years, projects to integrate academic skills and occupational skills have been coupled with instruction that increases the application of skills. Many educators contacted thought that while program design and instructional techniques have moved toward integration, assessment of foundation skills (tied to the context of the workplace) have not kept pace.

Most states have included academic and employability skills (workplace readiness) in each competency cluster. Arizona also included principles of Total Quality Management.

In the 80's V-TECS began the development of detailed curriculum guides that provide instructional resources and activities. Using the task analysis information, enabling competencies and related academic skills are identified and coded to the Snyder Basic/Essential Skills Taxonomy which provides a common language to identify the academic skills embedded in all catalogs. These foundation skills have been added to only a few occupations, but the process offers some promise. The consortium offers an automated criterion-referenced test item banks so that users can develop their own written or performance tests. What may make the massive amount of information available from V-TECS truly accessible is that it is being completely automated. Users will be able to configure duties and tasks in a variety of combinations and to sort foundation skills either generically or by specific jobs.

Assessment of Competence

While many state staff interviewed believed that they had made real progress in developing competency-based standards validated by industry, few were as sanguine about the means of measuring skills for **certification**. It is important to distinguish this final stage of assessment from the diagnostic

stage that identifies where instruction should begin and the benchmarking stage of assessment that instructors use to monitor student progress. Certification is the final step in assessment and is used to verify that skills have been attained.

Industry certification of individuals relies on an independent verification of skill attainment through testing. The certification part of assessment will become key if there is ever to be an emphasis on national standards for specific occupations that promotes portability of skills across states.

One source of competency achievement tests is the National Occupational Competency Testing Institute (NOCTI). It provides a variety of teacher, student, and industrial competency tests. NOCTI uses both the DACUM process and job task analysis task lists to identify critical tasks. By using these methods, employers from specific industries confirm the specific skills identified as needed by workers. NOCTI then develops specific tests items for various occupations.

Available to verify vocational achievements, the Student Occupational Competency Achievement Tests (SOCATS) developed by NOCTI are available in 70 occupational areas. A SOCAT consists of both written and performance tests. Some states use SOCATs to provide certificates of mastery. The Pennsylvania Skills Certificate is awarded based on performance on SOCATs and graduation from an approved program.

This differs from certificates using teacher ratings. Florida uses a teacher rating approach called the Career Merit Achievement Plan (Career MAP) that is a detailed listing of the performance and knowledge competencies required for entry into an occupational field. Tasks within specific duties are listed and a rating from 1 to 3 is assigned to performance competencies.

The ratings range from familiarity with an area to satisfactory performance without supervision. Knowledge competencies (describe the steps in photosynthesis for example) are checked as attained. Arizona has work in process on assessment that will include both written and performance-based tests. Oklahoma has been a leader in developing tests for specific competencies.

National Programs that Use Skill Standards

Other nationally-administered programs that use industry-based skill standards need to be mentioned. The Department of Labor administers two programs that have been at the forefront of skill-based programs for some time.

Apprenticeship -- As suggested by recent research in learning theory, the apprenticeship approach has been considered very effective. The approach combines classroom training with hands-on practice. The U.S. Department of Labor's Bureau of Apprenticeship and Training (BAT) provides 22 standards for registered apprenticeships. Many of the standards used are administrative in nature (awarding of certificates, maintenance of records, etc.) and not directly related to the quality of the program. One of the requirements that differs from competency-based educational theory is for time in an activity not skill attainment. This standards calls for 2,000 hours of work experience "consistent with training requirements as established by industry practice."

State Apprenticeship Committees and BAT serve informally as the accrediting agents for apprenticeship programs. The Apprenticeship 2000 review called for a formal accreditation process for apprenticeships. The apprenticeship model offers much experience on the use of national standards that are truly portable. It provides some assurance that a national/local system to identify skills and deliver training can work.

The unionized construction industry develops skill standards under the guidance of joint labor-management apprenticeship committees. Skills are assessed at various stages of the process using both written tests and demonstration of skills. National committees, working in concert with local apprenticeship committees, administer training trust funds. The national committees focus on making training more portable by certifying journeymen as instructors, purchasing training equipment in bulk, and developing standardized curricula (OTA, 1990). Local joint committees recruit workers and deliver the training.

Job Corps is a nationally administered education and training program serving over 60,000 disadvantaged youth. Over 100 Job Corps Centers offer a variety of training including apprenticeship programs. Each center is operated by a private contractor under contract to the Department of Labor. Instructional programs are operated by a host of organizations including unions, trade associations, educational institutions, and private businesses.

Since its inception, Job Corps has been a competency-based program. Job Corps uses the Training Achievement Records (TAR) to document duties and tasks for specific occupations as identified by industry advisory boards. As with many educational institutions, Job Corps clusters competencies to related jobs (See Attachment B for a copy of a TAR).

In 1988 Job Corps awarded a contract to NOCTI to validate the effectiveness of selected Job Corps vocational programs in 12 centers. NOCTI tests matched much of the instructional content of the TARs. Many Job Corps students demonstrated skill acquisition on the SOCAT for their occupational area. Benefits to Job Corps may include ways to make revisions to curriculum and ways to promote accountability within and across programs.

Students receive a certificate delineating test scores in relation to national data.

Public Policy Issues Around National Skill Standards

Decisions about the Use of Skill Standards

Initially, a decision would be needed about how national skill standards would be used. Existing approaches that include program accreditation, individual skill certification, and curriculum development all use national standards but have different methods to attain them. While certification of individual skills is the most widely used, it brings with it important questions around the assessment of skills and the ties to existing certification approaches. Should national efforts favor individual skill certification processes and attendant tests? Should a national process build on the three main approaches already in place? Most of the attention in national reports has been on individual skill certification. The overall process of skills certification is widely used in vocational education and some industries, but it raises additional questions.

Process for a National Approach to Individual Certification

Interviews for this paper revealed a good deal of interest in a **national approach to industry-based** competency standards. Educators repeatedly noted the importance of business and industry involvement in specifying and validating skills. Association representatives believed their efforts had improved product quality and the competence of workers. Both groups felt that industry involvement assured the quality of the standards and the portability of qualifications across the country.

However, those interviewed were less sure about what a national approach to industry-recognized standards would include. What kind of body would coordinate the establishment of national standards across industries? Would the government oversee the process or be limited to providing technical assistance and financing? How can such a process build on the work that states, associations, and apprenticeship committees have accomplished? How could adjustments to competencies be made to reflect local differences?

Who would be represented on industry-specific committees or councils? Industry, workers, and educators are logical choices. If a structured approach to developing national standards were implemented, one would have to ensure the representation of labor and management in all parts of an industry to approve the standards. National joint apprenticeship committees may be a model for standard development, but currently only unions have access to the standards established by unions. State technical committees are another model. They involve expert workers as well as management and processes to identify task lists although there does not seem to be the emphasis on union representation that might be needed.

Any approach would have to develop common language that defined the terms in use. Like any other concept, competency-based training has specific language that has become muddled over time as terms become used interchangeably. Agreement would be needed on level of detail to use, the performance objectives used, and other issues which can often cause major confusion.

What are the technical questions to be resolved to define jobs tasks? Perhaps the biggest issue is to decide whether national standards should be set at the job-specific level or some cluster of jobs within an industry. Current approaches such use job task lists extensively. Defining skills at the job-

specific level may not keep skills at a "world class" level. If work is being organized around fewer and fewer job classifications, does it make sense to pursue skills organized around broad requirements or are job specific standards best? What is the appropriate way to structure national skills efforts? If the competencies that the SCANS commission has identified are the key to transferable skills across occupations, how can they be joined with specific occupational skills?

Assessment of Skills

Testing is a necessary part of accountability and recognition of excellence. However, the promise of objective measurement of skills needs to be viewed with caution. Most industry associations certify individual skills using written multiple choice tests. The move toward performance-based testing using work portfolios, job simulations, and ratings based on observations is still in its infancy. If individual certification is pursued, issues around racial fairness of tests will need further exploration. The move toward performance-based testing would seem to be a logical approach to skills certification in the workplace because the focus is on demonstration of skills. There are a number of expert organizations in the development of performance-based tests, but test development is time consuming and expensive.

Guidelines on employment testing require that tests be relevant to the specific job. ASAE advises their members to use four general guidelines on the use of certifying exams: (1) criteria must stipulate what the exam is to measure, (2) must be a valid measure of job performance and job skills, (3) must eliminate cultural bias, and (4) the exam must be reliable (consistently measure degrees of knowledge).

Other testing issues remain. Workplace-oriented assessment approaches for academic skills, higher order thinking skills, and other non-occupational specific skills are slowly changing. Until very recently, basic skills tests for adults have been norm-referenced and used grade level not criteria based on the skills needed in the workplace. Skill domains were limited to reading, math, and communication. Basic academic tests measured skills in isolation from workplace skills. There are efforts to develop assessment approaches that attempt to address at least a part of this issue including the work of SCANS, the Educational Testing Service, and the American College of Testing. To improve workforce competence, a comprehensive assessment strategy that melds assessment of current occupational skills and the foundations needed for the changing workplace must be developed.

Final Concerns

If process and technical issues can be resolved, several over arching questions remain. While a tradition of skill standards exists within this country, it is limited and not tied directly to employment decisions for most workers. There is no assurance that workers or employers will use the system. Will employers use national skill standards to make hiring and promotional decisions? Will workers view standards as incentives to finish school and obtain the training to meet the standards?

At the same time can a system be devised where the focus is on recognizing skill attainment and not educational credentials? What will happen to individuals who do not meet standards? How can we avoid a tiered worker system that values skills but does not limit access to jobs. Can we move toward "world class" standards of performance and find ways to assist everyone to acquire them?

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